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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/621,239

07/16/2003

John Richard Fields

SAR 14882

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7590

09/02/2005

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EXAMINER

ARTHUR JEANGLAUDE, GERTRUDE

ART UNIT

PAPER NUMBER

3661

DATE MAILED: 09/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/621,239

Applicant(s)

FIELDS ET AL.

Examiner

Gertrude Arthur-Jeanglaude

Art Unit

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-16 and 19-24 is/are rejected.
- 7) ☒ Claim(s) 8, 9, 17, 18, 25 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/28/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Handwritten signature

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 10-16, 19-24, rejected under 35 U.S.C. 102(b) as being anticipated by Talukder et al. (June 18-21, 2002 IEEE; Fast and Reliable Obstacle Detection and Segmentation for Cross-country Navigation).

As to claims 1, 10, 19, Talikder et al. disclose a method and apparatus for detecting obstacles comprising: producing a depth map to identify regions that do not exceed a mobility constraint for a vehicle, and regions that do exceed the mobility constraint of the vehicle (See first page right column)

As to claims 2, 14, 24, Talikder et al. disclose the processing step includes processing data in the depth map to determine a height change of the terrain over a distance represented by pixels in the depth map (See Fig. 2)

As to claims 3-4, 11, 15, 20-21, Talikder et al. disclose the processing further comprises computing an amount by which the mobility constraint is exceeded in a region; and computing a non-drivable residual (See second page or page 2, bottom paragraph at left column- right column).

As to claims 5, 16, Talikder et al. disclose the non-drivable residual represents positive or negative elevations beyond limits computed from the slope constraints (See page 2, bottom left column-right column).

As to claims 6, 12, 22, Talikder et al. disclose as shown in Fig. 1 the depth map is a smoothed depth map (See page 1, right column).

As to claims 7, 13, 23, Talikder et al. disclose dividing the depth map into blocks of pixel; fitting a plane to each of the blocks of pixels; and identifying a point in the center of each plane as points that form the smoothed depth map (See page 3, right column).

Allowable Subject Matter

Claims 8-9, 17-18, 25-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art fails to disclose means for identifying a current point (X,Y,Z) representing a current location within the data;

means for subtracting a last point (X,Y,Z) representing a last location within the data from the current point to derive a displacement (M, LY. M);

means for computing a distance traveled (dL) between the last point and the current point; means for providing a maximum slope (sdi) for a drivable incline;

means for determining uphill and downhill limiting values ($\Delta Y_{\text{uphill}} = -S_{\text{di}} d_l$ and $\Delta Y_{\text{downhill}} = S_{\text{di}} d_l$) for a drivable vertical displacement ΔY by multiplying the maximum slope by the distance traveled;

if the vertical displacement ΔY is less than the limiting values, the terrain within the distance traveled is determined to be drivable;

if the vertical displacement ΔY is greater than the limiting values, the terrain within the distance traveled is determined to contain a potential obstacle; and

if a potential obstacle is detected, the depth map processor computes a non-drivable residual to determine whether the potential obstacle is an obstacle.

Nor does the prior art disclose the computing means in claim 18.

Conclusion

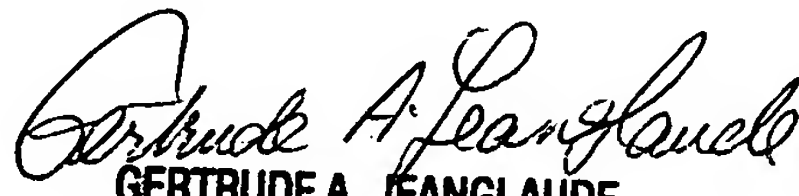
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gertrude Arthur-Jeanglaude whose telephone number is (571) 272-6954. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3661

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GAJ


GERTRUDE A. JEANGLAUDE
PRIMARY EXAMINER

August 29, 2005